



MEMORANDUM

Date: February 2, 2006

To: Terry Graumann

From: Robynn Andracsek

Regarding: PM₁₀ BACT for Diesel-fired Equipment

This memo serves to supplement the Best Available Control Analysis (BACT) for the Big Stone II project, specifically for particulate emissions from the diesel-fired equipment.

Two new diesel-fired units will be added as part of this project:

- 525 HP emergency diesel fire pump
- 2,220 HP diesel generator

The emergency fire pump will fire low sulfur diesel fuel (≤ 0.05 percent sulfur) and will be limited in operation to 500 hours per year. The diesel generator will fire low sulfur diesel fuel (8,760 hours per year potential).

The proposed New Source Performance Standard (NSPS) 40 CFR Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines was published July 11, 2005 in the Federal Register. As proposed, the diesel generator and the diesel fire pump emissions will be required to meet the NSPS. The definition of emergency equipment limits operation to 30 hours per year. Therefore, neither unit will qualify for the "emergency" exemption. Both units meet the classification of $< 3,000$ HP and < 10 liters per cylinder displacement.

Step 1 – Identify all control technologies

For large boilers, fabric filters (baghouses) and electrostatic precipitators (ESPs) have been installed. NSPS Subpart IIII identifies catalyzed diesel particulate filters (CDPF) used in conjunction with ultra low sulfur diesel (ULSD) fuel as appropriate controls.

Step 2 – Eliminate all technically infeasible control technologies

A search of EPA's RACT/BACT/LAER Clearinghouse (RBLC) showed no add-on controls for PM₁₀ control of diesel engines. See Table 1.

Fabric filters cannot operate at high temperatures, such as the 900 degrees F expected from the exhaust of these units. Additionally, the particulate loading in the exhaust is so low that a good filter cake would not develop. It is the filter cake more than the filter material that controls particulate matter emissions.

ESPs would be ineffective on fine particulate emissions, such as those created from diesel combustion. Additionally, the high exhaust temperature would cause thermal expansion and creep in the steel used as the construction material for the ESP.

Therefore, both fabric filters and ESPs are technically infeasible to control particulate emissions from these diesel engines.

Both CDPF in conjunction with ULSD are considered feasible for this project, and we are unaware of any other add-on controls for this size and type of unit.

Table 1: RBLC PM₁₀ Controls for Diesel-fired Engines.

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
Dutch Harbor Facility	AK	1/17/1997	Units 1-6: Fairbanks-Morse Generator (X6)	2252	EKw (Kilowatts)	
Bunge Corporation	IA	5/20/1997	Fire Pump #1 Fp1			
Bunge Corporation	IA	5/20/1997	Fire Pump #2 Fp2			
Greenville Sawmill	NC	9/26/1997	IC Engine, Oil System Diesel Pump	2.07	MMBtu/H	Limited Operation
Dighton Power Associate, LP	MA	10/6/1997	Engine, Diesel, Fire Pump	1.5	MMBtu/H	Dry Low Nox Combustion Technology With SCR Add-On Nox Control.
Archie Crippen	CA	12/9/1997	IC Engine, Detroit Diesel Model 8V-92TA	500	Bhp	Low-Sulfur Diesel Fuel And Positive Crankcase Ventilation
Bailey Powerhouse	AK	2/4/1998	Diesel Engine #3	6.45	Mw	None Indicated
Bailey Powerhouse	AK	2/4/1998	Diesel Engine #4	10.5	Mw	None Indicated
Bailey Powerhouse	AK	2/4/1998	Diesel Engines #1 And #2	4.5	Mw, Each	None Indicated
Archer Daniels Midland Co. - Northern Sun Veg. Oil	ND	7/9/1998	Generator, Backup Diesel	25	Kw	
Tenaska Frontier Generation Station	TX	8/7/1998	Black Start Generator No. 1-6 (6)	1750	Kw Each	None Indicated.
Atofina's Port Arthur Complex	TX	9/8/1998	Emergency Generator			
LSP - Cottage Grove, L.P.	MN	11/10/1998	Engine, Diesel, Emergency Fire Pump	2.7	MMBtu/H	Limited To Burn Diesel 150 H/Yr.
LSP - Cottage Grove, L.P.	MN	11/10/1998	Engine, Diesel, Emergency Fire Pump	2.7	MMBtu/H	Limited To Burn Diesel 150 H/Yr.
Alpine Development Project, Central Processing Facility	AK	2/1/1999	IC Engines, 2 Mw	2	Mw	
Tenaska Gateway Generating Station	TX	5/7/1999	Black Start Generator No.6, Gen 6	1759	Kw	
Tenaska Gateway Generating Station	TX	5/7/1999	Black Start Generator No.1, Gen 1, Fuel Oil	1.75	Mw	Fuel S Content No More Than 0.05% S; Max Operation 100 H/Yr
Tenaska Gateway Generating Station	TX	5/7/1999	Black Start Generator No.2, Gen 2, Fuel Oil	1.75	Mw	Fuel S Content No More Than 0.05% S; Max Operation 100 H/Yr
Tenaska Gateway Generating Station	TX	5/7/1999	Black Start Generator No.3, Gen 3, Fuel Oil	1.75	Mw	Fuel S Content No More Than 0.05% S; Max Operation 100 H/Yr
Tenaska Gateway Generating Station	TX	5/7/1999	Black Start Generator No.4, Gen 4, Fuel Oil	1.75	Mw	Fuel S Content No More Than 0.05% S; Max Operation 100 H/Yr

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
Tenaska Gateway Generating Station	TX	5/7/1999	Black Start Generator No.5, Gen 5, Fuel Oil	1.75	Mw	Fuel S Content No More Than 0.05% S; Max Operation 100 H/Yr
Rockingham Power, LLC Power Generating	NC	6/30/1999	IC Engine, Fire Water Pump	310	Hp	Limited To 500 H/Yr Of Operation
Rockingham Power, LLC Power Generating	NC	6/30/1999	IC Engine, Emergency Generator	250	Kw	Limited To 500 H/Yr Of Operation
Guardian Industries	IA	7/8/1999	Diesel Generator	1750	Kw	4 Degree Retard On Timing
Channel & Basin Reclamation	CA	8/17/1999	IC Engine, Compression Ignition, Diesel	810	Bhp	Low-Sulfur Diesel Fuel (< 0.05% S By Weight), And Positive Crankcase Ventilation Or Crankcase Control Device That Is 90% Efficient.
Cummins Cal Pacific, Inc.	CA	8/18/1999	IC Engine, Compression Ignition, Diesel	68	Bhp	Johnson-Matthey Model Jmfxpec4 Diesel Oxidation Catalyst
Coachella Valley Water District	CA	9/24/1999	IC Engine, Compression Ignition, Diesel	325	Bhp	0.05% By Weight Fuel Sulfur Content
Kiewit Pacific Co	CA	9/24/1999	IC Engine, Compression Ignition, Portable	755	Bhp	No Control
Sithe Mystic Development LLC	MA	9/29/1999	IC Engine, Emergency Diesel Generator	1500	Kw	Good Combustion Control
Us Government Naval Air Station North Island	CA	10/7/1999	IC Engine, Compression Ignition, Diesel	100	Bhp	Fuel Limited To < 0.05% Sulfur Content, By Weight
Santa Clarita Valley Food Services	CA	10/14/1999	IC Engine, Compression Ignition, Diesel	480	Bhp	No Control
Kern Asphalt Paving Sealing	CA	11/10/1999	IC Engine, Compression Ignition, Diesel	460	Bhp	Low Sulfur Diesel (<0.05% S By Weight) And Positive Crankcase Ventilation
Running Springs Water District	CA	11/16/1999	IC Engine, Compression Ignition, Diesel	86	Bhp	No Control
Odessa-Ector Generating Station	TX	11/18/1999	Emergency Firewater Pump, Eg-2	260	Hp	None Indicated
Odessa-Ector Generating Station	TX	11/18/1999	Emergency Electrical Generator	2000	Kw	None Indicated
Cominco Red Dog Mine	AK	12/10/1999	Incinerator	625	Lb/H	
Cominco Red Dog Mine	AK	12/10/1999	IC Engine, Diesel , Wartsila	5	Mw	
Snake River Power Plant	AK	12/28/1999	Diesel Electric Generator #11	1500	Kw	Good Air Pollution Control Practice.
Snake River Power Plant	AK	12/28/1999	Diesel Electric Generator #12a	3660	Kw	Good Air Pollution Control Practices.

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
Snake River Power Plant	AK	12/28/1999	Diesel Electric Generator #12b	4400	Kw	Good Air Pollution Control Practices.
Snake River Power Plant	AK	12/28/1999	Diesel Electric Generator #14	1875	Kw	Good Air Pollution Control Practices.
Snake River Power Plant	AK	12/28/1999	Diesel Electric Generator #5	1200	Kw	Good Air Pollution Control Practices.
Snake River Power Plant	AK	12/28/1999	Diesel Electric Generator #6	1000	Kw	Good Air Pollution Control Practices.
Snake River Power Plant	AK	12/28/1999	Diesel Electric Generator #9	2865	Kw	Good Air Pollution Control Practices.
Archer Generating Station	TX	1/3/2000	Emergency Firewater Pump	260	Hp	
Archer Generating Station	TX	1/3/2000	Emergency Electrical Generator	2000	Kw	
Agrimark/ Cabot Inc. (Amc)	VT	1/3/2000	IC Engine, Diesel	250	Kw	
Agrimark/ Cabot Inc. (Amc)	VT	1/3/2000	IC Engine, Diesel	100	Kw	
San Juan Repowering Project	PR	3/2/2000	Auxiliary Diesel Generator	5000	Kw	Limited Operation, Good Combustion Practices
San Juan Repowering Project	PR	3/2/2000	Combustion Turbines (2)	232	Mw (Each)	Good Combustion Practices; Low Ash Fuel (Low Sulfur Distillate Oil)
San Juan Repowering Project	PR	3/2/2000	Combustion Turbines (2)	232	Mw (Each)	Good Combustion Practices; Low Sulfur Fuel
Bastrop Clean Energy Center	TX	3/21/2000	Firewater Pump Engine	300	Bhp	
Kenai Refinery	AK	3/21/2000	Injection Turbine Cf-C33012-Tb	36700	Hp	Good Operational Practices. Comply With VE Emission Limits As A Surrogate For Pm Limits.
Kenai Refinery	AK	3/21/2000	Generator, N1	376	Hp	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, N2	376	Hp	None Indicated
Kenai Refinery	AK	3/21/2000	North Cummins, P708a	290	Hp	None Indicated.
Kenai Refinery	AK	3/21/2000	South Cummins, P708b	290	Hp	None Indicated.
Kenai Refinery	AK	3/21/2000	Upper Tank Farm Cat 3412dt, P708c	660	Hp	None Indicated.
Kenai Refinery	AK	3/21/2000	Generator Turbine, Cf-G-70002	11183	Kw	Good Operational Practices. Comply With VE Emission Limits As A Surrogate For Pm Emission Limits.

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
						Good Operational Practices. Comply With VE Limits As A Surrogate For Pm Emission Limits.
Kenai Refinery	AK	3/21/2000	Generator Turbine, Cf-G-70001	25800	Kw	
Kenai Refinery	AK	3/21/2000	Generator Dr1	700	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator Dr2	976	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator Dr3	700	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator Dr4	976	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 1	930	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 2	800	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 24	75	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 25	30	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 4	160	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 5	160	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 7	25	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 8	30	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, 9	120	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, Bp1	300	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, Bp2	160	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, D1	379	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, D2	379	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, Dr5	700	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generator, Dr6	700	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Generators, 10-23	210	Kw	None Indicated
Kenai Refinery	AK	3/21/2000	Incinerator, 3	750	Lb/H	None Indicated
Kenai Refinery	AK	3/21/2000	Electric Generator Cat 3412, Eg704	4.8	MMBtu/H	None Indicated.
Kenai Refinery	AK	3/21/2000	Stewart-Stevenson Generator, Eg801	6.1	MMBtu/H	None Indicated.
Kenai Refinery	AK	3/21/2000	Emergency Generator, Cf-G-70004	2	Mw	Good Operational Practices And Maintenance
Kenai Refinery	AK	3/21/2000	Emergency Generator, Cf-G-70003	2	Mw	Good Operational Practices And Maintenance.
Cucumonga County Water District	CA	3/30/2000	Ice: Emergency, Compression Ignition	890	Hp	
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #11	1050	Kw	None Indicated

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #12	1050	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #13	1050	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #3	350	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #4	500	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #5	750	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #6	1000	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #8	835	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator #9	835	Kw	None Indicated
Dillingham Power Plant	AK	5/8/2000	Diesel Electric Generator, #10	1135	Kw	None Indicated
Shell Chemical Company - Geismar Plant	LA	5/10/2000	Diesel Generator Heater	415	Hp	Good Combustion Practices And Engineering Design, Clean Burning Fuel
Brazos Valley Electric Generating Facility	TX	8/23/2000	Emergency Generator	1350	Hp	
Brazos Valley Electric Generating Facility	TX	8/23/2000	Fire Water Pump	300	Hp	
Pharmavite	CA	9/11/2000	Ice: Fire Pump, Compression Ignition	110	Hp	4-Way Catalyst Converter With EGR System
Badger Generating Co LLC	WI	9/20/2000	Diesel Engine, Emergency Fire Pump	3.8	MMBtu/H	Good Combustion Practices, Use Of Fuel < 0.05% S By Wt., Equipment Usage Limit.
Badger Generating Co LLC	WI	9/20/2000	Diesel Engine, Generator (4)	3.5	MMBtu/H	Good Combustion Practices. Fuel < 0.05 % By Wt. Sulfur. Permit Limits Set In Lb/H, Not G/Bhp-H.
Rock Springs	MD	11/30/2000	Emergency Diesel Firewater Pump	200	Hp	Application Of Good Combustion Controls; Lean Burn Technology
Cottonwood Energy Project	TX	12/15/2000	Emergency Diesel Generator			
Cottonwood Energy Project	TX	12/15/2000	Fire Water Pump			
Duke Energy Hot Springs	AR	12/29/2000	Generators, (2) Diesel	600	Kw	Clean Fuels. Combustion Controls
Dutch Harbor Plant	AK	3/28/2001	Diesel Electric Generator Set (Id No. 17)	585	Bhp	
Dutch Harbor Plant	AK	3/28/2001	Diesel Electric Generator Sets (Id Nos. 7-8)	900	Kw, Less Than, Each	
PSEG Waterford Energy LLC	OH	3/29/2001	Emergency Generator	1000	Kw	
PSEG Waterford Energy LLC	OH	3/29/2001	Fire Water Pump	290	Kw	

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
Kiamichi Energy Facility	OK	5/1/2001	Diesel Engine, Fire Water Pump	270	Hp	Good Combustion Practices And Design
Kiamichi Energy Facility	OK	5/1/2001	Diesel Engine, Emergency Generator	0.85	MMBtu/H	Good Combustion Practices And Design
Power System Associates/Johnson Power Systems	CA	7/11/2001	IC Engine, Emergency, Compression Ignition	764	Bhp	
Power System Associates/Johnson Power Systems	CA	7/11/2001	IC Engine, Emergency, Compression Ignition	610	Bhp	
Power System Associates/Johnson Power Systems	CA	7/11/2001	IC Engine, Emergency, Compression Ignition	536	Bhp	
Power System Associates/Johnson Power Systems	CA	7/11/2001	IC Engine, Emergency, Compression Ignition	471	Bhp	
Power System Associates/Johnson Power Systems	CA	7/11/2001	IC Engines, Emergency, Compression Ignition	685	Bhp	
Mansfield Mill	LA	8/14/2001	Administration Building Diesel Generator	587	Hp	Preventative Maintenance
Mansfield Mill	LA	8/14/2001	Clarifier Diesel Engine	310	Hp	Preventative Maintenance
Mansfield Mill	LA	8/14/2001	Auxiliary Diesel Generators No.1 & No.2	1100	Hp Each	Preventative Maintenance
Mansfield Mill	LA	8/14/2001	Caterpillar Back-Up Diesel Air Compressors, 2	775	Hp Each	Preventative Maintenance
Kelson Ridge	MD	9/27/2001	Emergency Diesel Fire Water Pump	200	Hp	Good Combustion Controls Operational Limitation
Kelson Ridge	MD	9/27/2001	Emergency Diesel Generator	700	Kw	Good Combustion Controls Operational Limitation
Horseshoe Energy Project	OK	2/12/2002	Diesel Engine, Emergency Generator	1000	Hp	Low Ash Diesel Fuel
Horseshoe Energy Project	OK	2/12/2002	Diesel Engine, Fire Water Pump	250	Hp	Low Ash Fuel
Duke Energy-Jackson Facility	AR	4/1/2002	Generator, Diesel-Fired	671	Hp	Good Operating Practice
Greater Des Moines Energy Center	IA	4/10/2002	Fire Pump	235	Bhp	
Greater Des Moines Energy Center	IA	4/10/2002	Emergency Generator	700	Kw	
SCE&G - Jasper County Generating Facility	SC	5/23/2002	Generator, Emergency, Diesel Fuel	2000	Kw	Clean Fuel(Low Sulfur Diesel), Good Combustion Practices
Genova Ok I Power Project	OK	6/13/2002	Diesel Engine, Fire Water Pump	200	Bhp	Engine Design And Good Combustion
Genova Ok I Power Project	OK	6/13/2002	Diesel Engine, Backup Generator	750	Kw	Combustion Control And Good Engine Design
Hawkeye Generating, LLC	IA	7/23/2002	Emergency Generator	18500	Gallons/Yr	GCP, Timing Retard

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
Hawkeye Generating, LLC	IA	7/23/2002	Fire Pump	6500	Gallons/Yr	GCP, Timing Retard
Hawkeye Generating, LLC	IA	7/23/2002	Emergency Generator	18500	Gallons/Yr	GCP, Timing Retard
Hawkeye Generating, LLC	IA	7/23/2002	Fire Pump	6500	Gallons/Yr	GCP, Timing Retard
Claremont Manor	CA	7/26/2002	Ice: Emergency, Compression Ignition	550	Bhp	Diesel Particulate Filter
University Of Cincinnati	OH	8/15/2002	Diesel Fired Engines (2), 2 Mw, 2922 Bhp	19.17	MMBtu/H	
University Of Cincinnati	OH	8/15/2002	Combustion Turbines (2), Comb Cycle, W Duct Burner	14.5	Mw	No Controls Proven Cost Effective.
University Of Cincinnati	OH	8/15/2002	Combustion Turbines (2), Comb Cycle, W/O Duct Burn	14.5	Mw	No Controls Proven Cost Effective.
Sterne Electric Generating Facility	TX	12/6/2002	Emergency Generator	1350	Hp	
Sterne Electric Generating Facility	TX	12/6/2002	Fire Water Pump	300	Hp	
Brazos Valley Electric Generating Facility	TX	12/31/2002	(2) Fire Water Pumps, Fwpump-1 & -2	300	Hp	None Indicated
Roquette America	IA	1/31/2003	710 Hp Diesel Engine	38.4	Gal/H	Low Ash Fuel, Good Combustion Practices.
Cardinal FG Co./ Cardinal Glass Plant	OK	3/18/2003	IC Engines, Emergency Generators (2)	2000	Kw	Engine Design
Duke Energy Stephens, LLC Stephens Energy	OK	3/21/2003	IC Engine, Backup Generator, Diesel	749	Bhp	Combustion Control And Good Engine Design
Duke Energy Stephens, LLC Stephens Energy	OK	3/21/2003	IC Engine, Fire Water Pump	265	Bhp	Combustion Control And Good Engine Design
MidAmerican Energy Company	IA	6/17/2003	Diesel Fire Pump	27.8	Gal/Hr	Good Combustion Practices
MidAmerican Energy Company	IA	6/17/2003	Emergency Generator	97.73	Gal/Hr	Good Combustion Practices
MidAmerican Energy Company	IA	6/17/2003	Diesel Fire Pump	27.8	Gal/Hr	Good Combustion Practices
MidAmerican Energy Company	IA	6/17/2003	Emergency Generator	97.73	Gal/Hr	Good Combustion Practices
Duke Energy Washington County LLC	OH	8/14/2003	Emergency Diesel Fire Pump Engine	400	Hp	Low Sulfur Fuel, Combustion Control
Duke Energy Washington County LLC	OH	8/14/2003	Emergency Diesel-Fired Generator	600	Kw	Low Sulfur Fuel, Combustion Control
Dutch Harbor Seafood Processing Facility	AK	10/10/2003	IC Engine, Generator, Fuel Oil, (3)	2220	Kw	Good Combustion Practice, Opacity Limits
East Los Angeles College	CA	10/31/2003	Ice: Fire Pump, Compression Ignition	160	Bhp	
Mankato Energy Center	MN	12/4/2003	Internal Combustion Engine, Large	1850	Hp	Good Combustion Practices
Mankato Energy Center	MN	12/4/2003	Internal Combustion Engine, Small	290	Hp	Good Combustion Practices
Mankato Energy Center	MN	12/4/2003	Internal Combustion Engine, Large	1850	Hp	Good Combustion Practices

Facility Name	State	Permit Date	Process Name	Throughput		Control Description
Mankato Energy Center	MN	12/4/2003	Internal Combustion Engine, Small	290	Hp	Good Combustion Practices
Ace Ethanol - Stanley	WI	1/21/2004	IC Engine, Diesel Generator Set, B70	1850	Bhp	Use Of Very Low Sulfur Diesel Fuel (0.05 Wt % S).
U.S. Army, Pine Bluff Arsenal	AR	2/17/2004	IC Engine, Emergency Generator (2)	2500	Kw	Limitation Of Operating Hours To Less Than 1200 Combined Hours/Yr For Sn-Pbcd-09 And Sn-Pbcd-10 And Less Than 500 Hours/Yr For Sn-Pbcd-12.
U.S. Army, Pine Bluff Arsenal	AR	2/17/2004	IC Engine, Emergency Generator Sn-Pbcd-12	250	Kw	Operating Hours Limit: < 500 H/Yr
Maidsville	WV	3/2/2004	IC Engine, Fire Water Pump	85	Hp	Good Combustion Practices
Maidsville	WV	3/2/2004	Emergency Generator	1801	Hp	Good Combustion Practices
Maidsville	WV	3/2/2004	IC Engine, Fire Water Pump	85	Hp	Good Combustion Practices
Fairbault Energy Park	MN	7/15/2004	IC Engine, Large, Fuel Oil (1)	670	Hp	Clean Fuel And Good Combustion.
Fairbault Energy Park	MN	7/15/2004	IC Engine, Small, Fuel Oil (1)	250	Hp	Clean Fuel And Good Combustion.
PSI Energy-Madison Station	OH	8/24/2004	Emergency Diesel Fire Pump	1.6	MMBtu/H	
PSI Energy-Madison Station	OH	8/24/2004	Emergency Diesel Fire Pump	1.6	MMBtu/H	
PSI Energy-Madison Station	OH	8/24/2004	Emergency Diesel Generator, 2	17.21	MMBtu/H	
PSI Energy-Madison Station	OH	8/24/2004	677 Mw Power Plant, 8 Simple-Cycle Comb Turb, Fired W/Diesel Fuel Oil	84.65	Mw	Low Ash Fuel And Efficient Combustion
Duke Energy Hanging Rock Energy Facility	OH	12/28/2004	Fire Water Pump (1)	265	Hp	
Duke Energy Hanging Rock Energy Facility	OH	12/28/2004	Backup Generators (2)	500	Kw	
Forsyth Energy Plant	NC	9/29/2005	IC Engine, Emergency Firewater Pump	11.4	MMBtu/H	
Forsyth Energy Plant	NC	9/29/2005	IC Engine, Emergency Generator	11.4	MMBtu/H	

Step 3 – Rank control technologies by control effectiveness

The most effective control technology is CDPF in conjunction with ULSD.

Step 4 – Evaluate most effective controls and document results

CDPF in conjunction with ULSD can achieve the emission levels shown in Table 2.

Table 2: NSPS Subpart IIII Emission Rates (gm/hp hr).

Pollutant	Diesel Fire Pump	Diesel Generator
PM ₁₀	0.15	0.15

Step 5 – Select BACT

BACT is determined to be engine design and/or CDPF used in conjunction with ULSD to achieve an emission rate of 0.15 gm PM₁₀/HP hr.